

### REMARKS

The present response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Claims 1-6, 11-14, 17, 21, 24-49, 53-60, 63-64 are pending in this case. Claims 30, 32, 63-64 have been rejected under 35 U.S.C. § 112, first paragraph. Claims 1-3, 5-6, 11-14, 21, 26-29, 31, 34 have been rejected under 35 U.S.C. § 102(b). Claims 4, 17, 24-25, 30, 32-33, 35-49, 53-60, 63-64 have been rejected under 35 U.S.C. § 103(a). Independent claims 1, 21, 36, 53, 63 and dependent claims 2, 5-6, 13, 28-30, 32-33, 38, 41-46 have been amended. Claims 3, 7-10, 15-16, 18-20, 22-23, 50-52, 61-62, 65 have been canceled without prejudice.

With respect to the Examiner's 35 U.S.C. § 103(a) rejections, Applicant has reviewed the cited art and respectfully submits that the art fails to disclose or suggest the Applicant's claimed invention. Therefore, Applicant respectfully traverses and requests favorable reconsideration.

### Telephonic Interview

Applicant wishes to thank the Examiner for granting a telephonic interview on March 25, 2005. The interview participants included Examiner Dalzid E. Singh and Howard Zaretsky (Applicant's representative).

### Response to 35 U.S.C. § 112, First Paragraph Rejections

The Examiner rejected claims 30, 32, 63-64 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement in that the claim(s) contain subject matter which was not described in the specification in such a way to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As stated in the MPEP Section 2164.05(a), "the specification need not disclose what is well known to those skilled in the art and preferably omits that which is well known to those skilled and already available to the public. *In re Buchnew*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ2d 81, 94 (Fed. Cir. 1984), *cert. denied*, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ2d 481, 489 (Fed. Cir. 1984)."

Regarding claim 63, optical add/drop multiplexers (OADMs) are discussed in the Background Section of the specification. Also discussed is the need to use active optical amplifiers along an optical ring network to boost weak optical signals (see specification page 2, line 29-34). It

is submitted that the use of optical amplifiers in OADM and other optical networking equipment is well known in the art. It is also well known that a key goal of amplifier design is to minimize the amount of unwanted noise injection into the output signal while boosting the amplitude of the input signal the desired amount. The use of amplifiers to boost weak signals (electrical as well as optical) is well known while their use in optical networks such as in OADM equipment to boost weak signals is also well known. Thus, it is also well known that optical amplifiers cause noise to be injected and accumulated onto optical signals.

Applicant believes that claims 30, 32, 63-64 overcome the Examiner's rejection based on § 112, first paragraph grounds. The Examiner is respectfully requested to withdraw the § 112, first paragraph rejection.

#### **Response to 35 U.S.C. § 102(c) Rejections**

##### **Claim 1:**

The Examiner rejected claim 1 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,612,805 ("Fevrier et al.").

While continuing to traverse the Examiner's rejections, Applicant, in order to expedite the prosecution, has chosen to clarify and emphasize the crucial distinctions between the present invention and the devices of the patents cited by the Examiner. Specifically, claim 1 has been amended to include a method of optical network termination for removing noise accumulation in an optical network, the method comprising the steps of demultiplexing an input optical signal into including a plurality of in-use channels and one or more unused channels, the plurality of input optical signals potentially corrupted with noise accumulation, blocking the one or more unused channels so as to eliminate noise from infinitely circulating over the unused channel through the optical network, and multiplexing the plurality of in-use channels and the one or more blocked unused channels onto the optical network.

Fevrier et al. teaches an add-drop optical WDM multiplexer for dropping a drop multiplex from an incoming multiplex signal and for adding an add multiplex into an outgoing multiplex signal. The multiplexer includes a demultiplexing device for separating a number of optical carriers from the incoming multiplex signal and for selecting drop carriers that constitute the drop as well through carriers that are to be output as the outgoing multiplex signal. The multiplex further includes an apparatus for selecting a certain number of add carriers from the total number of carriers of the add multiplex, and a coupling device and wavelength converter for allocating fixed wavelengths to the signals which modulate the through carriers and the add carriers.

It is submitted that the present invention is an optical network terminator adapted to prevent the noise accumulation in an optical network by blocking the noise in an optical network that would otherwise circulate indefinitely. Active optical components used in an optical network to boost weak optical signals generate and inject noise onto the network on top of the signal that is already present. If unchecked, the noise on unused channels in optical ring networks, for example, would be amplified over and over leading what is known as 'noise creep' wherein the noise accumulates each time it traverses around the ring. The noise accumulates to the a point where communication on used channels becomes impossible.

The present invention solves the problem of noise creep by effectively placing an optical terminator in the network which functions to block the signal on unused channels from traversing the network indefinitely. Attenuators or other suitable devices are used to attenuate the signal on unused channels sufficiently to effectively block any noise repeatedly being amplified thus preventing noise creep. This feature is neither taught nor suggested by Fevrier et al. Therefore Applicant respectfully traverses the rejection of claim 1 and requests favorable reconsideration.

Claims 1-3, 5-6, 11-14, 21, 26-31, 34:

The Examiner rejected claims 1-3, 5-6, 11-14, 21, 26-31, 34 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,594,046 ("Nishino").

While continuing to traverse the Examiner's rejections, Applicant, in order to expedite the prosecution, has chosen to clarify and emphasize the crucial distinctions between the present invention and the devices of the patents cited by the Examiner. Specifically, claim 21 has been amended to include an optical network terminator for removing accumulated noise from a wavelength division multiplexed (WDM) optical signal in an optical network comprising an optical demultiplexer operative to demultiplex the WDM optical signal into a plurality of in-use channels and one or more unused channels, the plurality of in-use channels and the one or more unused channels potentially corrupted with noise accumulation, one or more optical attenuators, each attenuator associated with an unused channel and operative to prevent noise from infinitely circulating over the unused channels through the optical network and an optical multiplexer adapted to multiplex the plurality of in-use channels and the output of the one or more optical attenuators to generate an output WDM optical signal therefrom with noise accumulation removed.

Nishino teaches a level flattening circuit for WDM optical signals. The circuit is supplied with a WDM optical signal and demultiplexes them into individual optical signals having different wavelengths, levels of which are separately feedback controlled to provide flattened optical signal

levels. The stated purpose of the demultiplexer of Nishino is to separate the input signal into signals having different wavelengths.

In contrast, the present invention is an optical terminator operative to prevent the noise accumulation in an optical network by blocking the noise in an optical network that would otherwise circulate indefinitely. Active optical components used in an optical network to boost weak optical signals generate and inject noise onto the network on top of the signal that is already present. If unchecked, the noise on unused channels in optical ring networks, for example, would be amplified over and over leading what is known as 'noise creep' wherein the noise accumulates each time it traverses around the ring. The noise accumulates to a point where communication on used channels becomes impossible.

The present invention solves the problem of noise creep by effectively placing an optical terminator in the network which functions to block the signal on unused channels from traversing the network indefinitely. Attenuators or other suitable devices are used to attenuate the signal on unused channels sufficiently to effectively block any noise repeatedly being amplified thus preventing noise creep. This feature is neither taught nor suggested by Fevrier et al.

It is noted that the use of demultiplexers, multiplexers, optical attenuators and monitors as taught by the present invention is significantly different from that taught by add/drop multiplexers of Nishino. The function of attenuators and monitors in Nishino is to provide power equalization and level control for use in an optical repeater. This is very different from the use taught by the present invention to prevent noise accumulation from circulating around an optical network.

It is believed that claims 1-3, 5-6, 11-14, 21, 26-31, 34 overcome the Examiner's § 102(b) rejection based on the Fevrier et al. and Nishino references. The Examiner is respectfully requested to withdraw the rejection based on § 102(b).

#### **Response to 35 U.S.C. § 103(a) Rejections**

The Examiner rejected claims 17, 24, 30, 32-33, 35-36, 38-49, 53-60 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,612,805 ("Fevrier et al.") in view of U.S. Patent No. 6,594,046 ("Nishino").

To reject the claims as obvious under 35 U.S.C. § 103(a) there must be some suggestion or motivation, either in the references themselves or in the prior art, to modify or combine teachings. Furthermore, the prior art references must teach all the claimed limitations. Applicant has reviewed the cited art and, based on the arguments presented above, respectfully submits that the art fails to teach or suggest the Applicant's claimed invention, and fails to teach each and every element and

limitation of the claims rejected herein. Therefore Applicant respectfully traverses the rejections and requests favorable reconsideration.

The Examiner rejected claims 4 and 25 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,594,046 ("Nishino") in view of U.S. Patent No. 6,529,317 ("Choi et al.").

Choi et al. teaches an improved long wavelength-band EDFA (L-band EDFA) is disclosed. The EDFA includes an input terminal for receiving signal light, a pumping unit for pumping a 1,530 nm wavelength band pumping light, a WDM coupler for multiplexing the signal light and the pumping light, and an EDF pumped by a 1,530 nm wavelength band pumping light for amplifying the signal light. Compared with conventional 1,480 nm pumping, the EDFA pumped by 1,530 nm band pumping have about two times higher power conversion efficiency.

To reject the claims as obvious under 35 U.S.C. §103(a) there must be some suggestion or motivation, either in the references themselves or in the prior art, to modify or combine teachings. Furthermore, the prior art references must teach all the claimed limitations. Applicant has reviewed the cited art and, based on the arguments presented above, respectfully submits that the art fails to teach or suggest the Applicant's claimed invention, and fails to teach each and every element and limitation of the claims rejected herein. Therefore Applicant respectfully traverses the rejections and requests favorable reconsideration.

The Examiner rejected claims 37, 63-64 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,594,046 ("Nishino") in view of U.S. Patent No. 5,612,805 ("Fevric et al.") and further in view of U.S. Patent No. 6,529,317 ("Choi et al.").

To reject the claims as obvious under 35 U.S.C. §103(a) there must be some suggestion or motivation, either in the references themselves or in the prior art, to modify or combine teachings. Furthermore, the prior art references must teach all the claimed limitations. Applicant has reviewed the cited art and, based on the arguments presented above, respectfully submits that the art fails to teach or suggest the Applicant's claimed invention, and fails to teach each and every element and limitation of the claims rejected herein. Therefore Applicant respectfully traverses the rejections and requests favorable reconsideration.

It is believed that claims 4, 17, 24-25, 30, 32-33, 35-49, 53-60, 63-64 overcome the Examiner's rejection based on § 103(a) grounds. The Examiner is respectfully requested to withdraw the rejection based on § 103(a).

### Correction of Typographical Errors

Amendments haven been made to correct grammatical and usage errors in the specification. No new matter has been added to the application by these amendments.

### Conclusion

In view of the above amendments and remarks, it is respectfully submitted that independent claims 1, 21, 36, 53, 63 and dependent claims 2, 4-6, 11-14, 17, 24-35, 37-49, 54- 60, 64 are now in condition for allowance. Prompt notice of allowance is respectfully solicited.

In light of the Amendments and the arguments set forth above, Applicant earnestly believes that they are entitled to a letters patent, and respectively solicit the Examiner to expedite prosecution of this patent applications to issuance. Should the Examiner have any questions, the Examiner is encouraged to telephone the undersigned.

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Respectfully submitted,

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